

THE OVIPOSITION OF *JOBLOTIA DIGITATUS* . RONDANI

(*Diptera, Culicidæ*)

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Joblotia digitatus Rond. commonly deposits its egg in the rain water that accumulates in the broken cocoa pods strewn in heaps on the ground about the cool, shady parts of cocoa fields, in Trinidad, B. W. I.

The "parturient" female assumes a characteristic attitude upon the surface of the water. Her hind pair of legs lie extended backward to their maximum length and slightly outward. The front pair of legs are projected forward and outward, the femur forming almost a right angle with the tibia and the latter an obtuse angle with the tarsus which rests forward and outward. In both the front and hind legs the tarsi are the only parts in direct contact with the surface of the water. The position of the middle pair of legs is very definite; the femur is directed backward, the tibia is acutely flexed forward and the ankle joint embraces firmly the lateral borders of the egg mass, the tarsus projecting sharply backward and resting upon the surface of the water. The thorax, abdomen and head are raised above the water. While the cohesiveness of the egg mass is maintained through the clasp of her middle ankle joints, the weight and buoyancy of the eggs preserve her from being submerged during the process of oviposition. This process, which usually takes place in the morning, lasts from two to four hours, during which time she seems quite helpless, being unable and unwilling to take to her wings if disturbed, rendering herself an easy captive and giving one the impression of being in pain. After oviposition has ceased she continues to rest upon the surface of the water, often away from the egg mass for from two to three hours, then crawls to the sides of the containing receptacle and gladly wings a rapid flight away.

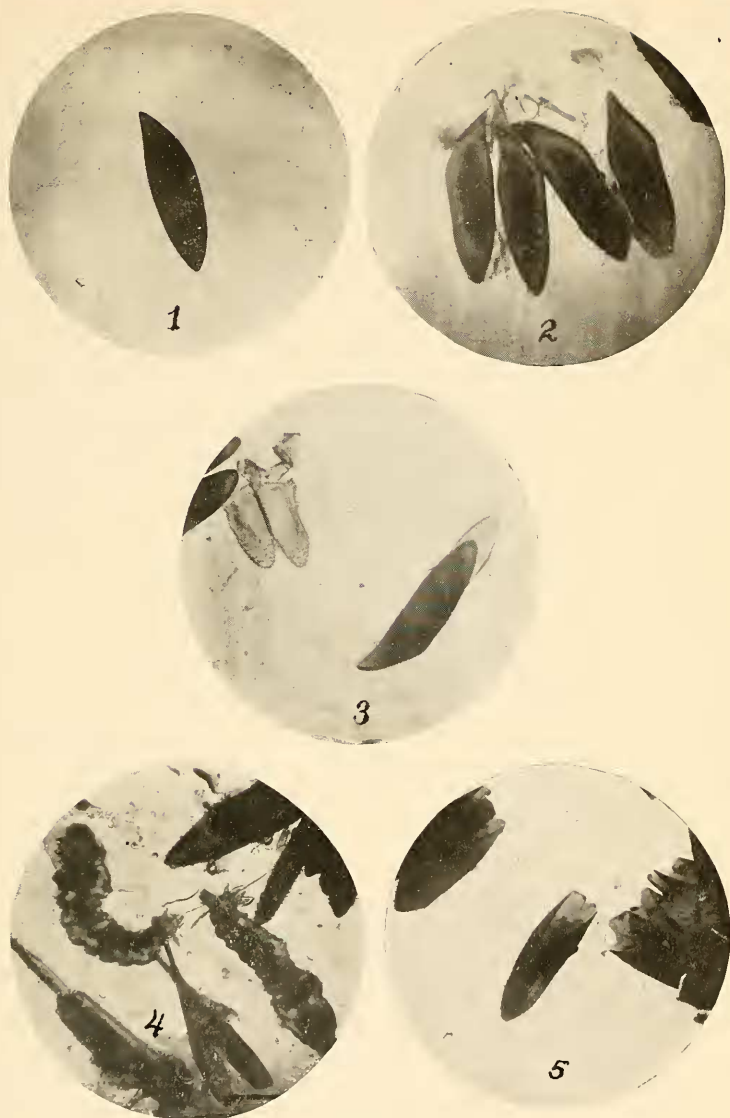
The eggs lie in circular or square-like masses, consisting of from 25 to 40 in number, floating with their long axes perpendicular to the surface of the water and glued together at their

broadest circumference by a gelatinous substance which helps to keep the mass afloat. A little less than one-third of its length lies submerged, the remaining portion being above the water. The eggs on escaping from the female are of a distinct grayish brown color, but in less than half an hour that portion which lies exposed to the air above the surface of the water assumes a dark steel blue appearance, the whole mass of individual eggs simulating a honey comb or a collection of gun shells resting on their bases.

To the naked eye an individual egg shows an ovoid shape elongated at both extremities with their broadest circumference immediately above the junction of the blue and brownish portions, the latter tapering rapidly with a sharp and distinct curve. The lower portion, which retains its color, is chitinous; the other, which lies above the water, is brittle and "calcareous."

Microscopically an egg is seen to consist of one portion a little less than one-third which lies submerged and which retains its brown color, and another portion which rests above the surface of the water over which there is a definite but loosely adherent capsule, studded with numerous translucent pedunculated and sessile tubercles, arranged in regular rows and containing air (Plate III, figs. 2, 3, 5). This investing capsule enfolds the underlying portion of egg and in the fresh preparation is seen to extend to the junction of its lower and middle third. It is, however, absent along a line running from below its apex to its base, leaving bare a space gradually increasing in extent from above downward and with its extremity curved on either side. Along this bare area the brown egg shell can be seen. The change in color from brownish to dark blue affects this capsule only and not the egg shell. Shorn of its capsule the underlying egg shell is seen to consist of a brownish outer layer made up of definite circular strands enclosing an inner thin delicate layer surrounding the yolk substance which bathes the larva cells and subsequently the larva. No operculum can be seen.

The larva hangs with its head downward in the floating egg and in from eight to ten hours after oviposition ruptures that



EXPLANATION OF PLATE III

1. Egg of *Joblotia digitatus* Rond.
2. A group of eggs, showing unhatched larvae within.
3. Eggs, with investing capsule detached.
4. Larvae, one minute after escape from egg.
5. Remains of egg after escape of larvae.